

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

SLOAN VALVE COMPANY, a Delaware)	
corporation,)	
Plaintiff,)	
)	No. 10-cv-204
v.)	
)	
ZURN INDUSTRIES, INC., a Delaware)	
corporation, and ZURN INDUSTRIES, LLC, a)	
Delaware limited liability company,)	
)	
Defendants.)	

MEMORANDUM OPINION AND ORDER

AMY J. ST. EVE, District Court Judge:

The parties in this patent infringement case dispute the construction of nine claim terms in the patent-in-suit. After reviewing the parties’ respective submissions and conducting a *Markman* hearing on August 28, 2012, *see Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*en banc*), *aff’d* 517 U.S. 370, 116 S. Ct. 1384, 134 L. Ed. 2d 577 (1996), the Court construes the disputed claim terms as set forth below.

BACKGROUND

I. Procedural History

Sloan filed this lawsuit on January 13, 2010, alleging that Zurn had appropriated its “dual mode flush valve invention,” therefore infringing U.S. Patent No. 7,607,635, entitled “Flush Valve Handle Assembly Providing Dual Mode Operation” (the “‘635 Patent”) and the corresponding U.S. Patent Application Publication No. 2006/0151729 (the “Patent Application

Publication”).¹ (R. 1.) Zurn subsequently asserted several counterclaims and affirmative defenses. (R. 72, 85.)

On December 16, 2010, upon Zurn’s motion, the Court stayed the proceedings because the U.S. Patent and Trademark Office (“PTO”) had granted Zurn’s request for an ex parte reexamination of the ‘635 Patent. (R. 149, 157.) On September 27, 2011, the PTO issued an Ex Parte Reexamination Certificate for the ‘635 Patent, in which certain of Sloan’s claims in were amended and others were added, as discussed in more detail below. (R. 184-1, Reexam. Cert.) On November 10, 2011, the Court granted Sloan’s motion to re-open the case and lift the stay. (R. 183, 192.)

On November 29, 2011, Sloan filed its Amended and Supplemental Complaint, asserting direct and willful infringement of claims 1, 4-6, 10-12, 14, 19, 29-31, and 33-34 of the ‘635 Patent, infringement of the Patent Application Publication, induced infringement of the ‘635 Patent, and contributory infringement of the ‘635 Patent. (R. 197.) On December 9, 2011, Zurn filed its Answer, Counterclaims, and Affirmative Defenses to Sloan’s Complaint, in which Zurn asserts several counterclaims. (R. 202, 207.)

II. The Patent-In-Suit

The ‘635 Patent “relates to flush valves for use with plumbing fixtures such as toilets, and more specifically to improvements in the bushing of the actuating handle assembly that will provide for user-selectable, dual mode operation of the flush valve.” (R. 314-1, ‘635 Patent, col. 1, ll. 6-10.) The improvement is a mechanism that allows a user to select one of two flush

¹ To be clear, the Application Number for the ‘635 Patent is 22/211,273. (See ‘635 Patent at 1.) The Patent Application Publication Number is US 2006/0151729. (See R. 197-2.)

volumes based on the direction of actuation of the handle: a full flush volume to evacuate solid waste from the bowl or a reduced flush volume to remove liquid waste. (*Id.*, col. 1, ll. 11-19, col. 2, ll. 27-33.)

Cross-sectional representations of the preferred embodiment of the invention are reproduced below for reference. These figures show the handle (38), bushing (66), and plunger shank (80). Figure 5 represents a full flush volume, and Figure 6 represents a reduced-volume flush. (*See id.*, col. 3, ll. 15-20.)

Figure 5

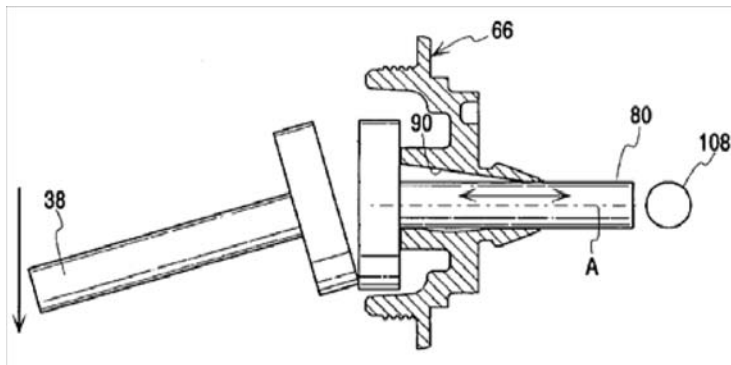
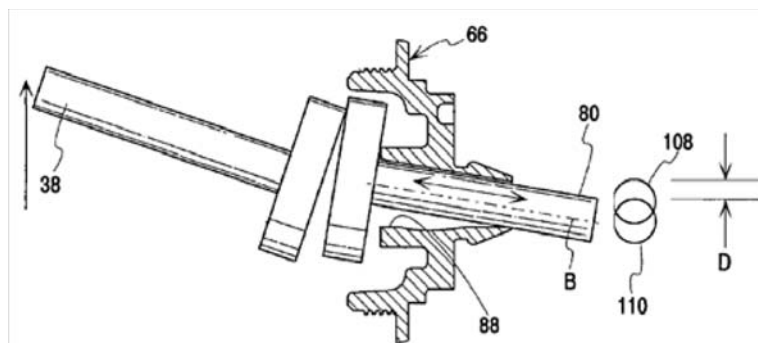


Figure 6



As depicted in Figure 5, in the full flush mode, the user pushes the handle (38) down, which causes the plunger shank (80) to slide along the horizontal main axis (A) and hit the relief valve stem at a location (108) that results in a full flush volume. (*See id.*, col. 5, ll. 9-19.) As shown in Figure 6, in the reduced-volume flush mode, the user pulls the handle up, which causes the plunger shank (80) to tilt and slide along an angled axis (B), as compared to the horizontal axis, and hit the relief valve stem at a lower contact point (110). This results in a reduced opening of the relief valve, and thus a reduced volume of water. (*See id.*, col. 5, ll. 19-34.)

Claim 1 is representative of the “dual mode flush valve” claims. It recites:

A dual mode flush valve, comprising a body having an inlet and an outlet, a valve seat between said inlet and outlet, a valve member movable to a closing position on said valve seat to control water flow between said inlet and outlet, a pressure chamber defined in said body above said valve member, a relief valve mounted on the valve member for movement between seated and unseated positions which close and open the pressure chamber, respectively, a handle assembly mounted on the body and including an actuatable handle, a bushing having a passage defined therethrough and a plunger slidably and tiltably mounted in said bushing passage, the plunger having an outer end in the engagement with the handle and an inner end engagable with the relief valve, the plunger being movable to unseat the relief valve, the bushing passage defining both a first axis of plunger travel and a second axis of plunger travel which is angled with respect to the first axis of plunger travel, wherein tilting of the handle in a first direction moves the plunger along the first axis of plunger travel providing a first flush volume of water adequate to evacuate solid waste and tilting of the handle in a second direction tilts the plunger and moves the plunger along the second axis of the plunger travel providing a second flush volume of water adequate to evacuate liquid waste.

(Reexam. Cert., col. 1, ll. 31-54.) Claim 12 is representative of the “system for operating a water flush valve” claims. It recites as follows:

A system for operating a water flush valve in a plurality of user selectable flush volume modes including a liquid waste removal mode and a solid waste removal mode, comprising a user handle operable in at least a first and second direction to cause a face plate to pivot about a plurality of portions of the face plate; and the face plate of the system coupled to the user handle and constructed to respond to handle motion by at least the following: (1) motion in a first handle direction of

the user handle causing the face plate to pivot about a first face plate portion of the face plate moving in a first face plate direction and a coupled lower portion of a plunger head and coupled shank remaining substantially centered on a horizontal axis of travel such that an end view of the shank remains substantially centered on the horizontal axis of travel, thereby releasing a first flush volume of water for solid waste flushing purposes in the solid waste removal mode and (2) motion in a second handle direction of the user handle causing the face plate to pivot about a second face plate portion of the face plate moving in a second face plate direction and a coupled upper portion of the plunger head and the coupled shank displaced away from a center of the horizontal axis of travel such that an end view of the shank is displaced from the horizontal axis of travel, thereby releasing a second flush volume of water adequate for liquid waste flushing purposes in the liquid waste removal mode.

(*Id.*, col. 1, l. 56 through col. 2, l. 13.)

III. Prosecution and Reexamination History of the ‘635 Patent

A. Prosecution History

Sloan filed its application for the ‘635 Patent on August 25, 2005. (R. 314-1 at JA0001.) The ‘635 Patent lists John R. Wilson as the inventor and Sloan as the assignee.² (*Id.*; R. 314-2 at JA0198.) The application contained 14 claims, with independent claims 1, 7, 10 and 12. (R. 314-3 at JA0212-32.) On April 7, 2006, Sloan filed a preliminary amendment, which, among other things, added new claims 15-31. (*Id.* at JA0182-92). In an Office Action mailed on February 18, 2009, the examiner rejected claims 2, 3, 16, 21-25, and 30, which referred to a “first bore” and a “second bore” in describing the bushing passage, as indefinite under 35 U.S.C. § 112. (*Id.* at JA0133.) The examiner noted that it was “unclear . . . how the first and second bore can be two different bores since it appears that the plunger passes through only a single

² As the Federal Circuit has noted, “[i]nventions are created by individuals, not corporations.” *MBO Labs., Inc. v. Becton, Dickinson, & Co.*, 474 F.3d 1323, 1326 n.1 (Fed. Cir. 2007). For simplicity, however, the Court refers to “Sloan” as shorthand for the applicants throughout this Order.

bore,” and further explained that “[d]escribing a single bore as multiple bores renders the claims indefinite.” (*Id.*) In addition, the examiner also indicated that he would allow claims 16 and 30 if Sloan rewrote them to overcome the rejection under 35 U.S.C. § 112. (*Id.* at JA0134.) Sloan replied on April 22, 2009, in which it added claims 35-41 and, among other things, amended claims 2, 3, 16, 21-25, 29, and 30 to “clarify the description of the passage by removing the term ‘bore.’” (R. 314-1 at JA0100.) Sloan represented that it made the amendments to “overcome the § 112 rejection.” (*Id.* at JA0100-01.) The ‘635 Patent issued on October 27, 2009. (*Id.* at JA0001.)

B. Reexamination History

On September 17, 2010, Zurn filed a request for ex parte reexamination of claims 1, 4-12, 14, 18, 19, 28-31, 33 and 34 of the ‘635 Patent, alleging that a substantial new question of patentability existed. (R. 314-13 at JA0936-1033.) In particular, Zurn requested reexamination of the ‘635 Patent in view of the following prior art: U.S. Patent No. 3,279,742 (“Billeter”); U.S. Patent Application No. 2006/0033060 (“Funari”), ASME A112.19.14-2001, and U.S. Patent No. 4,134,570 (“Walker”). (*Id.* at JA0937.) The examiner granted Zurn’s request. (R. 314-12 at JA0871-880; R. 314-11 at JA0734.)

In an Office Action mailed on January 10, 2011, the examiner rejected claims 1, 5, 7, 8, 12, 14, 18, 19, and 31 and confirmed the patentability of claims 4, 6, 9, 28-30, and 34. (R. 314-11 at JA0733-62.) Specifically, the examiner rejected claims 1, 5, 7, 8, 12, and 14 under 35 U.S.C. § 102(b) as anticipated by Billeter. (*Id.* at JA0739-42.) The examiner also rejected claims 18, 19, and 31 under 35 U.S.C. § 102(b) as anticipated by Billeter, or, in the alternative, as obvious under 35 U.S.C. § 103(a) over Billeter. (*Id.* at JA0742-43.) Finally, the examiner

rejected claims 1, 5, 7, 8, 12, 14, 18, 19, and 31 under 35 U.S.C. § 103(a) as obvious over Billeter in view of Walker. (*Id.* at JA0743-49.) The examiner interpreted Billeter as “inherently a dual mode flush valve.” (*See id.* at JA0740-42; JA0745-48.) The examiner also interpreted Walker as disclosing “a flush valve with a screw [] to limit the motion of the handle [] which results in a lower flush volume.” (*Id.* at JA0745-46, 0749.)

During an interview with the examiner on March 31, 2011, the examiner “expressed that [claim 1] may benefit from additional language to clarify that the claimed structure is related to the dual mode concept set forth in the preamble.” (R. 314-5 at JA0386.) Sloan, in a Supplemental Amendment and Reply filed on April 8, 2011, amended claim 1 to “explicitly recite[] language linking the first and second axes of plunger travel to a first flush volume and second flush volume, respectively.” (*Id.*) Sloan further stated that “it would be understood that the first flush volume and second flush volume are sufficiently different so as to effectuate dual flush modes, that is a dual flush mode wherein one flush mode provides a flush volume adequate for liquid evacuation and another flush mode provides a flush volume of greater volume adequate for solid (or liquid) evacuation.” (*Id.*)

Sloan further responded to the examiner’s rejections on April 7, 2011, amending claims 12 and 18 to include language directed to “user selectable flush volume modes” and designating “a first flush volume” relating to removal of solid waste and “a second flush volume” relating to removal of liquid waste. (R. 314-5 at JA0392-422.) Sloan also proposed new claims 36-46. (*Id.* at JA0394-97.) In responding to the Billeter reference, Sloan stated that “Billeter discloses only a conventional single mode flush valve,” whereas a person of ordinary skill in the art “would understand a ‘dual mode flush valve’ to be one that permits a user deliberately to select

between two distinct modes of flushing a fixture, either a reduced flush volume mode for evacuating liquid waste or a full flush volume mode for both solid and liquid waste.” (*Id.* at JA0401 (emphasis in original).) Further, Sloan stated that in a dual mode flush system, “selection of one of the flush modes results in a flush volume of water being flushed that may vary about the selected flush volume due to tolerances and variances in the flush valve and the fixture (as noted below, such is contemplated by the relevant ASME standards).” (*Id.*) In addition, Sloan provided that the “reduced flush volume is insufficient to effectively evacuate solid waste but provides water savings over a single flush mode designed to reliably provide sufficient water to evaluate solid waste (and thus wasting substantial water when only liquid waste removal is needed).” (*Id.*) Sloan concluded that “one of ordinary skill in the art would understand the term ‘dual mode’ in regard to flush valves to correspond to the above description,” referencing Sloan’s statements above. (*Id.*)

In response to the examiner’s concerns, Sloan also submitted a declaration from Mr. Julius Ballanco (the “Reexamination Declaration”). In his Reexamination Declaration, Mr. Ballanco concluded that “a dual mode flush means: having a user selectable specific full flush volume for removing solid and liquid waste from the water closet and a specific lower flush volume that is used to remove the liquid waste.” (*Id.* at JA0479.) Mr. Ballanco discussed Billeter, stating that it “does not describe any large tolerances between the diameter of the plunger [] and the diameter of the handle bushing [],” and that “movement of the plunger in [Billeter] produces a single flush volume and certainly is not intended to provide a dual mode flush valve.” (*Id.* at JA0481.) The Reexamination Declaration further characterized Billeter as producing “a single flush volume when the handle was operated in either the down or up

orientation” which means that “a dual mode flush was not an inherent part of [Billeter].” (*Id.* at JA0483.) Mr. Ballanco’s Declaration also discussed industry standards for various flush volumes. (*Id.* at JA0476-79.)

The PTO mailed a Notice of Intent to Issue Ex Parte Reexamination Certificate on July 22, 2011. (R. 314-3 at JA0249-59.) In the “Statement of Reasons for Patentability and/or Confirmation,” the examiner found that the amendment to the claims adding “that the first and second flush volumes were for removing solid waste and liquid waste” is a claim limitation which “give[s] the preamble breath and life.” (*Id.* at JA0253.) Thus, the examiner concluded that the “dual mode” claim term has patentable weight. (*Id.*) The examiner observed that the 2003 ASME Dual Flush Devices for Water Closets defines dual flush as “a mechanism which allows a full volume or a reduced volume,” and that it provides that the “reduced volume” is a 30% reduction in the water volume. (*Id.*; *see also* R. 314-8 at JA0545-58, 2003 ASME Dual Flush Devices for Water Closets, A112.19.10-2003.) Additionally, the examiner stated that the inherent flush volume differentials in the Billeter reference do not meet the definition of a dual mode flush valve. (*Id.*)

In addition, the examiner found claims 1, 12, 18 and 36 patentable over Billeter and Walker due to the requirement that the claimed invention’s plunger is “able to move in a horizontal axis of travel for one flush mode (full volume)” and is “tiltable for the other flush volume (reduced volume).” (R. 314-3 at JA0253-54.) The examiner also found the claimed invention patentable over Funari, Billeter, and Walker based on the fact that it has “at least one axis of plunger travel and the second axis of plunger travel” and a “plunger [that] is tiltable.” (*Id.* at JA0254.) In addressing the bushing passage, the examiner stated that “Billeter does not

disclose the first opening including extension portions joining the upper and lower arcuate portions,” and further stated that “a circular opening includes an upper and a lower arcuate portion, but does not include a pair of extensions.” (*Id.* at JA0256-57.) The PTO issued an Ex Parte Reexamination Certificate on September 27, 2011. (*Id.* at JA0240.)

IV. Disputed Claim Terms

The parties dispute nine claim terms of the ‘635 Patent.³ For convenience, the parties’ respective proposal as to each term is set forth in the following chart.

³ The parties originally submitted ten disputed terms, but they have since agreed on the construction of the term “adequate.” Therefore, the Court need not construe that term.

Claim Term or Phrase	Sloan’s Proposed Construction	Zurn’s Proposed Construction
“dual mode flush valve” ⁴	A water conservation valve that permits a user deliberately to select between two distinct modes of flushing a fixture: either a reduced flush volume mode adequate to evacuate liquid waste or a full flush volume mode adequate to evacuate solid waste. The reduced flush volume must be at least about a 30% reduction in water volume when compared to the full flush volume. A valve that produces minor variations from flush to flush within the industry standard of plus or minus 10% from a specified flush volume is not a dual mode flush valve.	A flush valve that can be operated in at least two different ways to release two different volumes of water.
“a first flush volume of water . . . and . . . a second flush volume of water” ⁵	Two volumes of water that are sufficiently different so as to effectual dual flush modes.	A first volume of water that differs from a second volume of water measured upon actuation of the flush valve handle.

⁴ The parties agree that “operating a flush valve in dual mode” follows the same construction as “dual mode flush valve” and that “plurality of user selectable flush volume modes” means “at least dual mode.” (R. 340, Joint Claim Construction Chart at 2 n.1.) Zurn represents that this term, and its variants, are found in claims 1 (including dependent claims 4 and 5), 7 (including dependent claim 8), 12 (including dependent claim 14), and 31. (R. 316, Zurn’s Mem. at 3.)

⁵ The parties agree that “first flush volume” has the same meaning as “first flush volume of water” and that “second flush volume” has the same meaning as “second flush volume of water.” (*Id.* at 2 n.2.)

Claim Term or Phrase	Sloan’s Proposed Construction	Zurn’s Proposed Construction
“plunger mounted for sliding and tilting” ⁶	The plunger is positioned so that it is capable of sliding and slanting to an angle sufficient to cause a difference of at least about 30% in flush volumes.	Mounted so the plunger moves along an axis of plunger travel that is at an angle to a horizontal axis.
“tilting the inner end of the plunger” ⁷	Causing the plunger shank to slant to an angle sufficient to create a difference of at least about 30% in flush volumes.	Moving the plunger so that it travels along a plunger travel axis that is at an angle to another plunger travel axis (e.g. a horizontal axis).
“axis of plunger travel” –or– “bushing passage defining both a first axis of plunger travel and a second axis of plunger travel which is angled with respect to the first axis of plunger travel” ⁸	The bushing passage defining both an imaginary line through the center of a first bore of the bushing passage and an imaginary line through the center of a second, partially overlapping bore of the bushing passage, which imaginary line is angled with respect to the first axis.	A straight line upon which the plunger travels that is coincident with the longitudinal axis of the plunger.

⁶ The parties agree that “plunger slidably and tiltably mounted” and “plunger slidable and tiltable” have the same meaning as “plunger mounted for sliding and tilting.” (*Id.* at 3 n.3.)

⁷ The parties agree that “tilting of the first end of the plunger,” “causing the plunger to tilt,” and “tilts the plunger” have the same meaning as “tilting the inner end of the plunger.” (*Id.* at 3 n.4.)

⁸ The parties failed to reach agreement on the phrase to be construed.

Claim Term or Phrase	Sloan’s Proposed Construction	Zurn’s Proposed Construction
“displaced away from a center of the horizontal axis of travel such that an end view of the shank is displaced from the horizontal axis of travel”	That viewed when facing the end of the plunger shank, the end of the plunger shank is not substantially centered on the imaginary line through the center of the horizontal bore of the bushing passage.	Moving the plunger along a plunger travel axis that is at an angle to the horizontal axis of travel.
“tilted portion” (of the bushing passage) ⁹	A portion of the bushing passage with a slanted wall that allows the plunger to tilt.	A portion of the bushing configured so that the plunger moves along an angled axis of plunger travel.
“arcuate portion”	A portion of the wall of the opening that is curved like a bow.	A portion of a circle.
“extension portions”	Portions of the wall opening that extend from and join an end of the upper arcuate portion to an end of the lower arcuate portion.	Segments that connect two ends of the upper arcuate portion with the lower arcuate portion that are not part of the upper or lower circle.

V. The *Markman* Hearing

On August 28, 2012, the Court conducted a *Markman* hearing. During the hearing, Sloan’s expert, Mr. Julius Ballanco, presented a tutorial on how flush valves work. In addition, Mr. Ballanco testified about the industry standards that are at issue in this case. Zurn’s expert, Mr. Tsan-Liang Su, also testified. He, too, gave a brief tutorial on how flush valves work, and he testified about the applicable industry standards. The parties then proceeded with their respective arguments in support of their proposed constructions.

⁹ The parties agree that “tilted portion” (of the bushing passage) and “tilt portion” (of the bushing passage) have the same meaning. (*Id.* at 4 n.6.)

LEGAL STANDARD

Because the claims of a patent define the invention, claim construction—the process of giving meaning to the claim language—defines the scope of the invention. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) (“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’”) (citation omitted). Claim construction is a matter of law for the court to determine. *Markman*, 517 U.S. at 391; *Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1357-58 (Fed. Cir. 2012). The Court begins its claim construction analysis with the words of the claims themselves, giving those words their ordinary and customary meaning, which is the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips*, 415 F.3d at 1312-13; *see also InterDigital Comm’ns, LLC v. Int’l Trade Comm’n*, — F.3d —, 2012 WL 3104597, at *5 (Fed. Cir. Aug. 1, 2012).

The Federal Circuit teaches that the Court is to focus on the intrinsic record in construing claims, stating “[i]mportantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313; *see also HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1275 (Fed. Cir. 2012) (stating that the district court “should have referred to the specification to understand the claims”) (citing *Phillips*, 415 F.3d at 1315). In construing a disputed claim term, courts also look to the prosecution history of the patent-in-suit. *HTC Corp.*, 667 F.3d at 1276 (“A court should . . . look to the prosecution history when construing a claim.”) (citing *Phillips*, 415 F.3d at 1317).

Although “less significant than the intrinsic record,” extrinsic evidence, which consists of “all evidence external to the patent and prosecution history, including expert and inventor

testimony, dictionaries, and learned treatises,” may “shed useful light on the relevant art.” *See Phillips*, 415 F.3d at 1317 (citations omitted); *see also HTC Corp.*, 667 F.3d at 1277 (“A court may also look to extrinsic evidence, such as dictionaries and expert opinions.”) (citing *Phillips*, 415 F.3d at 1317). Before considering extrinsic evidence to construe a disputed claim, however, courts must first examine the intrinsic evidence. *Phillips*, 415 F.3d at 1317-19; *see also OI Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1295-96 (Fed. Cir. 2012) (“To ascertain the scope and meaning of the asserted claims, we look to the words of the claims themselves, the specification, the prosecution history, and, *if necessary*, any relevant extrinsic evidence.”) (quoting *Chicago Bd. Options Exch., Inc. v. Int’l Sec. Exch., LLC*, 677 F.3d 1361, 1366 (Fed. Cir. 2012) (emphasis added)); *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1348 (Fed. Cir. 2009) (“extrinsic sources like expert testimony cannot overcome more persuasive intrinsic evidence”).

As the Federal Circuit has recognized, “[r]eexamination statements ‘are relevant prosecution history when interpreting claims.’” *St. Clair Intellectual Prop. Consultants, Inc. v. Canon Inc.*, 412 Fed. App’x 270, 275-76 (Fed. Cir. 2011) (quoting *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1439 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1317 (prosecution history is the “complete record of the proceedings before the PTO”). “The reexamination procedure serves an important role in providing a district court with an ‘expert view of the PTO.’” *St. Clair*, 412 Fed. App’x at 276 (quoting *Gould v. Control Laser Corp.*, 705 F.2d 1340, 1342 (Fed. Cir. 1983)); *see also JAB Distribs., LLC v. London Luxury, LLC*, No. 09 C 5831, 2010 WL 1882010, at *4 (N.D. Ill. May 11, 2010) (“One purpose of the reexamination procedure is to eliminate trial of [an] issue (when the claim is canceled) or to facilitate trial of that issue by providing the district court with the expert view of the PTO (when a claim survives

the reexamination proceeding).”) (quoting *Gould*, 705 F.2d at 1342). “Because an examiner in reexamination can be considered one of ordinary skill in the art, his construction of the asserted claims carries significant weight.” *St. Clair*, 412 Fed. App’x at 276; *see also Cooper Notification, Inc. v. Twitter, Inc.*, — F. Supp. 2d —, 2012 WL 2126903, at *6 (D. Del. May 25, 2012) (“As a person skilled in the art, the Examiner’s evaluation of the claims and prior art can provide persuasive intrinsic evidence from the reexamination proceedings that supports the Court’s construction.”) (citing *St. Clair*, 412 Fed. App’x at 276). The examiner’s interpretation, however, is not controlling on the Court. *See Dow Chem. Co. v. Sumitomo Chem. Co.*, 257 F.3d 1364, 1382 (Fed. Cir. 2001).

DISCUSSION

I. “Dual Mode Flush Valve”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
A water conservation valve that permits a user deliberately to select between two distinct modes of flushing a fixture: either a reduced flush volume mode adequate to evacuate liquid waste or a full flush volume mode adequate to evacuate solid waste. The reduced flush volume must be at least about a 30% reduction in water volume when compared to the full flush volume. A valve that produces minor variations from flush to flush within the industry standard of plus or minus 10% from a specified flush volume is not a dual mode flush valve.	A flush valve that can be operated in at least two different ways to release two different volumes of water.	A water conservation valve that permits a user deliberately to select between two distinct modes of flushing a fixture: either a reduced flush volume mode adequate to evacuate liquid waste or a full flush volume mode adequate to evacuate solid waste.

This term appears in claims 1, 7, 12, 29, and 31.¹⁰ (*See* R. 369, Revised Joint Claim Construction Chart at 2.) The intrinsic evidence supports the first sentence of Sloan’s proposed construction. It does not, however, support the remainder of that construction. Because Zurn’s proposed construction is belied by the intrinsic evidence, the Court rejects it.

A. “A Water Conservation Valve That Permits a User Deliberately to Select Between Two Distinct Modes of Flushing a Fixture: Either a Reduced Flush Volume Mode Adequate to Evacuate Liquid Waste or a Full Flush Volume Mode Adequate to Evacuate Solid Waste.”

The words of the claims, the specification, and the prosecution history all establish that a “dual mode flush valve” is defined by the user’s ability to “select between two distinct modes of flushing a fixture: either a reduced flush volume mode adequate to evacuate liquid waste or a full flush volume mode adequate to evacuate solid waste.” *See Phillips*, 415 F.3d at 1313 (“Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.”).

Claim 1 uses this phrase in the preamble. During reexamination, Sloan added language to the body of the claim to give the phrase in the preamble patentable weight. Specifically, Sloan added the language “providing a first flush volume of water adequate to evacuate solid waste” and a “providing a second flush volume of water adequate to evacuate liquid waste.” (Reexam. Cert., col. 1, ll. 49-54.) Sloan similarly amended claims 12, 18, and 36. (*Id.* col. 2, ll. 3-5 and ll. 11-13, ll. 17-19, ll. 38-64.) *See Phillips*, 415 F.3d at 1314 (in construing claims,

¹⁰ Although the term “dual mode flush valve” appears in the preamble of claim 1, the parties agree that the examiner ascribed patentable weight to this term during reexamination. *See* JA0253 (examiner noted that “the term ‘dual mode’ has been given patentable weight since the body gives breath and life to the preamble”); *see also Vizio, Inc. v. Int’l Trade Comm’n*, 605 F.3d 1330, 1340 (Fed. Cir. 2010) (“In general, a preamble limits the invention . . . if it is necessary to give life, meaning, and vitality to the claim.”) (citation and internal quotation marks omitted).

courts should look to “the words of the claims themselves”).

In addition, the specification similarly defines “dual mode flush valve.” The “Background of the Invention” section of the ‘635 Patent states that:

Conservation of water resources in the use of toilets can be achieved by allowing a user to select the volume of water required to clean the fixture. For liquid waste a reduced flush volume is adequate. For solid waste a full flush is necessary. Based on the user’s determination of whether a larger or smaller flush volume is appropriate to clean the bowl, a flush valve can be operated to provide a larger or smaller volume. Flush valves of this type can be designated dual mode flush valves.

(‘635 Patent, col. 1, ll. 11-19.) Moreover, the “Summary of the Invention” section of the specification provides that “[t]he present invention is directed to a dual mode flush valve which allows the user to select the amount of water that will flow, depending on the amount of water required to clean the fixture.” (*Id.* col. 1, ll. 60-63.) These statements strongly support the first portion of Sloan’s proposed construction. *See Phillips*, 415 F.3d at 1315 (stating that the specification is often the “single best guide to the meaning of a disputed term”) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *PSN Ill., LLC v. Ivoclar Vivadent, Inc.*, 525 F.3d 1159, 1165-66 (Fed. Cir. 2008) (placing significant weight on the summary of the invention in claim construction); *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1374 (Fed. Cir. 2008) (“[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.”) (citation and internal quotation marks omitted).

Furthermore, the prosecution history supports this part of Sloan’s construction. During reexamination, Sloan, in arguing over prior art, stated that

One of ordinary skill in the art, upon reviewing the [‘635 Patent’s] specification, would understand a ‘dual mode flush value’ to be one that permits a user deliberately to select between two distinct modes of flushing a fixture, either a reduced flush volume mode for evacuating liquid waste or a full flush volume

mode for both liquid and solid waste.

(R. 314-5 at JA0401 and JA0677 (emphasis in original)); *St. Clair*, 412 Fed. App'x at 275-76 (“Reexamination statements ‘are relevant prosecution history when interpreting claims.’”) (citation omitted).

Because Zurn’s proposed construction does not contain the limitation of two distinct modes with two distinct purposes—which is present in the body of the claim itself and in both the specification and the prosecution history—its construction is incorrect. *See Old Town Canoe Co. v. Confluence Holdings Corp.*, 448 F.3d 1309, 1318 (Fed. Cir. 2006) (a party is “not entitled to a claim construction divorced from the context of the written description and prosecution history”).

B. The Intrinsic Evidence Does Not Support the Remainder of Sloan’s Proposed Construction

Sloan’s proposed construction includes the following numerical limitations: “[t]he reduced flush volume must be at least about a 30% reduction in water volume when compared to the full flush volume. A valve that produces minor variations from flush to flush within the industry standard of plus or minus 10% from a specified flush volume is not a dual mode flush valve.” The intrinsic evidence, however, does not support the importation of these numerical limitations into the claims. Accordingly, the Court rejects the final two sentences of Sloan’s proposed construction.

The ‘635 Patent, including the specification and the words of the claims, makes no reference to either the 30% or the 10% limitation. *See Phillips*, 415 F.3d at 1313 (“the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification”); *see also E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1368-69 (Fed. Cir.

2003) (determining that there was “no basis in the ordinary meaning of the claim terms at issue or in other claim language to impose industry standard dimensions”); *Jenmar Corp. v. Excel Mining Sys., LLC*, No. 07-cv-1529, 2009 WL 2168749, at *4 (W.D. Pa. July 16, 2009) (declining to import an industry standard that the patent did not recite or mention); cf. *Renishaw PLC v. Marposs Società per Azioni*, 158 F.3d 1242, 1249 (Fed. Cir. 1998) (“when a claim term is expressed in general descriptive words, we will not ordinarily limit the term to a numerical range that may appear in the written description or in other claims”).

Additionally, the specification and patent claims also do not reference or incorporate the industry standards that, according to Sloan, provide the numerical limitations. Although the specification refers to prior art—specifically, United States Patent No. 2,738,946 (the “‘946 Patent”)—as an example of a dual mode flush valve, the ‘946 Patent taught a “dual mode flush valve” that produced a difference in volume of 55%, not 30%. (R. 327-3 at col. 4, ll. 33-35) (“The standard syphon-jet type of water closet requires approximately 4 1/2 gallons of water to flush it properly when used for flushing solid waste matter, as in the usual manner. For flushing out liquids after urinating, a short flush of only about two gallons is necessary. . . .”).)

Furthermore, on reexamination of the ‘635 Patent, despite having the opportunity, Sloan did not seek to import either the 30% or the 10% limitation into the claims. During reexamination, the examiner initially rejected claims 1, 5, 7, 8, 12, 14, 18-19, and 31 as anticipated by Billeter. (R. 314-11 at JA0739-43).¹¹ The examiner also interpreted Billeter as “inherently a dual mode flush valve.” (*Id.* at JA0740-41.) In response, Sloan amended claims 12 and 18 to include language directed to “user selectable flush volume modes” and designating

¹¹ The examiner also rejected claims 18, 19, and 31 as obvious over Billeter. Further, the examiner rejected claims 1, 5, 7-8, 12, 14, 19, and 31 as obvious over Billeter in view of Walker. (*Id.* at JA0743-49.)

that “a first flush volume” relates to removal of solid waste and “a second flush volume” relates to removal of liquid waste. (R. 314-5 at JA0393-94). Sloan also distinguished Billeter on the grounds that it “discloses only a conventional single mode flush valve,” whereas a person of ordinary skill in the art “would understand a ‘dual mode flush valve’ to be one that permits a user deliberately to select between two distinct modes of flushing a fixture, either a reduced flush volume mode for evacuating liquid waste or a full flush volume mode for both solid and liquid waste.” (*Id.* at JA0401 (emphasis in original).) While these arguments support the first sentence of Sloan’s proposed construction, they do not support the remainder.

Moreover, although Sloan cited Mr. Ballanco’s Reexamination Declaration (which, in turn, cited to industry standards discussing the 30% numerical limitation) to the examiner during reexamination, the Reexamination Declaration discussed the industry standards only in the context of providing a “historical perspective of dual mode flush in the United States” and not with particular reference to the claimed invention. (R. 314-6 at JA0473-78.) Indeed, Mr. Ballanco stated in his Reexamination Declaration that “[a]fter having reviewed the Wilson [‘]635 patent, I conclude that a dual mode flush means: having a user selectable specific full flush volume for removing solid and liquid waste from the water closet and a specific lower flush volume that is used to remove the liquid waste.” (*Id.* at JA0479.) Significantly, Mr. Ballanco did not reference the numerical limitations in describing what his opinion of “dual mode flush” means, as one who has ordinary skill in the art. (*See also* R. 314-5 at JA0403 (Sloan argued to the reexaminer that “[t]he meaning of one of ordinary skill in the art . . . is discussed in the Ballanco [Reexamination] Declaration.”).) Mr. Ballanco’s statements echo Sloan’s overarching argument during reexamination—namely, that dual mode flush valves provide two distinct flush volumes: one for the removal of liquid waste and another for the

removal of solid waste.

Indeed, elsewhere during the reexamination proceeding, the examiner told Sloan that claim 1 would benefit from “additional language to clarify that the claimed structure is related to the dual mode concept set forth in the preamble.” (R. 314-5, JA0386). In response, Sloan amended claim 1 to “explicitly recite[] language linking the first and second axes of plunger travel to a first flush volume and second flush volume, respectively.” (*Id.*) Sloan further stated that “it would be understood that the first flush volume and second flush volume are sufficiently different so as to effectuate dual flush modes, *that is a dual flush mode wherein one flush mode provides a flush volume adequate for liquid evacuation and another flush mode provides a flush volume one of greater volume adequate for solid (or liquid) evacuation.*” (*Id.* (emphasis added).) Again, Sloan did not incorporate the numerical limitations it now advances, but rather relied on the solid waste/liquid waste flush volume distinction, which the Court has already determined is part of the “dual mode flush valve” construction because it is supported by the intrinsic evidence, including the specification. Indeed, Sloan argued to the examiner that “the patent specification clearly teaches what “dual mode” is. (*Id.* at JA0403.) As such, it is unnecessary to reach beyond the specification to import industry standards that are not referenced or incorporated into the patent. *See, e.g., Sinorgchem Co., Shandong v. Int’l Trade Comm’n*, 511 F.3d 1132, 1138 (Fed. Cir. 2007) (“When the specification explains and defines a term used in the claims, without ambiguity or incompleteness, there is no need to search further for the meaning of the term.”) (citations omitted); *see also Herman Miller, Inc. v. Teknion Corp.*, 504 F. Supp. 2d 360, 370 (N.D. Ill. 2007) (declining to adopt an industry standard in construing a claim term after finding that “[t]he language of the claims—in light of the specification—provides the proper construction”).

Finally, in the Statement of Reasons for Patentability on reexamination, the examiner did not read the numerical limitations into the claims, but rather focused, as Sloan and Mr. Ballanco did, on the solid waste/liquid waste flush volume distinction. Specifically, the examiner stated that Sloan had amended claims 1, 12, 18, and 36 to add “that the first and second flush volumes were for removing solid waste and liquid waste.” (R. 314-3 at JA0253.) The examiner determined that because of these limitations, the term “dual mode” has patentable weight. (*Id.*) Sloan agreed during the *Markman* hearing that the preamble is limiting. In addressing the Billeter reference, the examiner corrected her initial characterization of the Billeter flush valve as “inherently a dual mode flush valve,” and noted that the inherent flush volume differences in Billeter do not meet the standard in 2003 ASME Dual Flush Devices for Water Closets (A112.19.10), which defines dual flush “as a mechanism which allows a full volume or a reduced volume.” (*Id.*) The examiner further noted that such standard defines the reduced volume as a 30% reduction in the water volume. (*Id.*) Moreover, the examiner found that Sloan’s arguments regarding the required tilt of the plunger were persuasive, and distinguished Billeter, as well as Walker and Funari, on the grounds that none of those prior art references teach flush valve systems in which the plunger tilts. (*Id.* at JA0253-54.)

The examiner did not read the 30% limitation into the claims of the ‘635 Patent. *See Salazar v. Procter & Gamble Co.*, 414 F.3d 1342 (Fed. Cir. 2005) (“An examiner’s statement cannot amend a claim.”); *Dow Chem. Co.*, 257 F.3d at 1382 (“statements made by an examiner will not necessarily limit a claim”). Nor is there any indication in the record that Sloan’s references to the 30% standard during reexamination are “a clear and un mistakeable surrender of subject matter.” *See Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335, 1342 (Fed. Cir. 2009). Even if the examiner had read the 30% limitation into the claims, however, it would not change the

Court’s conclusion. *See SRAM Corp. v. AD-II Eng’g, Inc.*, 465 F.3d 1351, 1359 (Fed. Cir. 2006) (rejecting the district court’s construction and the PTO’s construction—after three reexamination proceedings—of a claim term, noting that the “court is not bound by the PTO’s claim interpretation because we review claim construction *de novo*”).

Sloan’s 10% numerical limitation proposal is also insufficiently supported by the intrinsic evidence. As previously explained, the words of the claims, the specification, and the initial prosecution history are silent with respect to the 10% limitation. Relying on statements in Mr. Ballanco’s Reexamination Declaration, Sloan nonetheless argues that it disclaimed flush valves that produce variations of less than 10% during reexamination. Specifically, Sloan contends that Mr. Ballanco stated that the American Society of Sanitary Engineering 1037 standard (the “ASSE 1037 Standard”) allows variations of plus or minus 10% in single mode flush valves. Sloan also points to evidence it produced during reexamination showing that the Billeter flush valve produced variations of about 6%, in addition to Mr. Ballanco’s statement that “[c]learly dual mode flush was not an inherent part of [Billeter]. (R. 314-6, JA0483.) These statements, however, do not unambiguously demonstrate that Sloan intended to disavow all flush valves that produce less than 10% variations in flush volume. *See Grober v. Mako Prods.*, 686 F.3d 1335, 1341 (Fed. Cir. 2012) (“[T]he doctrine of prosecution disclaimer only applies to unambiguous disavowals.”). As with the 30% limitation standards, Mr. Ballanco’s statement regarding the ASSE 1037 Standard was in the context of providing historical background on dual mode flush valves in the United States. (See R. 314-6, JA0476.) Moreover, the examiner did not focus on or even mention the 10% figure in allowing the claims on reexamination, but rather concluded that the “inherent flush volume differences in Billeter do not meet the definition of dual mode flush valve.” (R. 314-3, at JA0253.) Notably, the examiner did not even reference

the ASSE 1037 Standard, nor did the examiner equate an “inherent flush volume difference” with a 10% differential, as Sloan’s argument suggests. Indeed, as Sloan concedes, the Billeter valve produced a 6%, not a 10%, flush volume variance.

In sum, the intrinsic evidence does not support the numerical limitations that Sloan proposes, and Sloan’s isolated and indirect references to industry standards during the reexamination do not evidence a “clear and unmistakable surrender of subject matter.” *See Ecolab*, 569 F.3d at 1342 (“Even if an isolated statement appears to disclaim subject matter, the prosecution history as a whole may demonstrate that the patentee committed no clear and unmistakable disclaimer.”). Accordingly, the Court rejects the final two sentences of Sloan’s proposed construction.

II. “A First Flush Volume of Water . . . and . . . a Second Flush Volume of Water”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
Two volumes of water that are sufficiently different so as to effectuate dual flush modes.	A first volume of water that differs from a second volume of water measured upon actuation of the flush valve handle.	A first volume of water that differs from a second volume of water.

This term appears in asserted claims 1, 12, and 18.¹² (*See* R. 369, Revised Joint Claim Construction Chart at 3.) The Court adopts the majority of Zurn’s proposed construction because it reflects the plain and ordinary meaning of the disputed term. *Phillips*, 415 F.3d at 1314 (when terms have a plain and ordinary meaning, claim construction “involves little more than the application of the widely accepted meaning of commonly-understood words”). As the Federal Circuit teaches, “[c]laim terms are generally given their ordinary meaning as understood

¹² Although claim 18 is not an asserted claim, claim 19, which depends from claim 18, is an asserted claim.

by persons skilled in the art in question at the time of the invention.” *InterDigital Comm’cns*, 2012 WL 3104597, at *5 (citing *Phillips*, 415 F.3d at 1312-13). Moreover, “[t]he plain meaning of claim language ordinarily controls unless the patentee acts as his own lexicographer and provides a special definition for a particular claim term or the patentee disavows the ordinary scope of a claim term either in the specification or during prosecution.” *Id.*

Neither party argues that Sloan acted as its own lexicographer in defining the disputed term. Despite Sloan’s arguments to the contrary, Sloan did not disavow the ordinary scope of this term in the specification or during prosecution or reexamination of the ‘635 Patent. Accordingly, the ordinary meaning of the disputed term, which Zurn’s proposed construction reflects, controls. The later half of Zurn’s proposal—“measured upon actuation of the flush valve handle”—is not, however, a part of the plain and ordinary meaning of the disputed term, nor is that phrase necessary in light of the surrounding language in claims 1, 12, and 18, which discusses actuation of the flush valve handle. Indeed, Zurn concedes that the latter half of its proposed construction is “optional[]” to provide context. (R. 338, Zurn’s Reply at 13.) Because it is not a part of the plain and ordinary meaning and is redundant in light of other claim language, the Court does not adopt that phrase as part of its construction.

The Court rejects Sloan’s proposed construction, which improperly reads the “dual flush mode” limitation into the disputed claim term. Sloan contends that the examiner’s statements during reexamination support its proposed construction. In particular, it argues that Zurn’s request to reexamine the ‘635 Patent was based on its argument that “prior art flush valves inherently had bore holes somewhat larger than the plunger rod, which necessarily resulted in releasing two different volumes of water when the handle is raised versus lowered.” (R. 326, Sloan’s Resp. at 19.) According to Sloan, it countered Zurn’s argument “by equating the ‘first

flush volume of water adequate to evacuate solid waste’ and ‘second flush volume of water adequate to evacuate liquid waste’ limitations to ‘dual mode,’” and that the examiner agreed with Sloan by rejecting Zurn’s argument that inherent flush volumes meet the definition of “dual mode flush valve.” (*Id.*)

While Sloan accurately represents the examiner’s determinations, those determinations do not require the construction Sloan advocates. The relevant portion of claim 1, which Sloan amended during reexamination, states as follows:

A dual mode flush valve . . . wherein tilting of the handle in a first direction moves the plunger along the first axis of plunger travel *providing a first flush volume of water adequate to evacuate solid waste* and tilting of the handle in a second direction tilts the plunger and moves the plunger along the second axis of the plunger travel *providing a second flush volume of water adequate to evacuate liquid waste*.

(Reexam. Cert., col. 1, ll. 31, 47-54.) As is clear from an examination of the remainder of the terms in amended claim 1, that claim already provides the limitations that Sloan argued during reexamination. The same is true for asserted claims 12 and 18. (*See id.*, col. 2, ll. 3-4 and 11-13 (claim 12) and col. 2, ll. 17-18 (claim 18).) If the Court construes “first volume of water . . . and a . . . second volume of water” in the manner Sloan proposes, then the surrounding terms in amended claims 1, 12, and 18, *e.g.*, “adequate to evacuate solid waste” and “adequate to evacuate liquid waste,” are superfluous. *Digital-Vending Servs. Int’l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1274-75 (Fed. Cir. 2012) (instructing that courts should construe claim terms “such that words in a claim are not rendered superfluous”) (citing *Phillips*, 415 F.3d at 1314); *see also Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006) (“claims are interpreted with an eye toward giving effect to all terms in the claim”).

Furthermore, adopting Sloan’s proposal would improperly add limitations to claim 23, which is a non-asserted claim. *See generally Phillips*, 415 F.3d at 1314 (“Other claims of the

patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term.”). Claim 23 contains the “first flush volume of water” and “second flush volume of water” terms, but it does not contain the “adequate to evacuate solid waste” and “adequate to evacuate liquid waste” language explained above. Using Sloan’s construction would improperly import the dual mode limitation into claim 23. Accordingly, the Court adopts Zurn’s construction.

III. “Plunger Mounted For Sliding and Tilting”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
The plunger is positioned so that it is capable of sliding and slanting to an angle sufficient to cause a difference of at least about 30% in flush volumes.	Mounted so the plunger moves along an axis of plunger travel that is at an angle to a horizontal axis.	Mounted so the plunger is capable of sliding along the horizontal axis and tilting and sliding along an axis of plunger travel that is at an angle to the horizontal axis.

This term appears in claims 1, 7, 9, 29, and 33. (*See* R. 369, Revised Joint Claim Construction Chart at 4.) Because neither party has proposed an accurate construction, the Court construes the claim by adopting a portion of Zurn’s proposal and a portion of Sloan’s proposal.

The plain meaning of “plunger mounted for sliding and tilting” requires that the plunger is capable of “sliding” and “tilting.” *See InterDigital Comm’cns*, 2012 WL 3104597, at *5 (courts begin claim construction with the ordinary meaning of the term). Both parties appear to agree on the “sliding” element, although Zurn’s proposal unnecessarily rephrases the “sliding” capability as a “moving” capability. Because “sliding” is clear on its face, there is no need to rephrase this term. Additionally, not only do the words of the claims themselves support the tilting capability, the reexamination history also provides that the plunger in the claimed invention is able to tilt. (*See* R. 314-3, JA0254 (in reasons for allowance of claims 1, 12, 18, and

36, examiner distinguished the prior art Billeter reference from the claimed invention on the grounds that the Billeter reference “does not allow the plunger to tilt” whereas in the claimed invention, “the plunger is tiltable for the other flush volume (reduced volume).”) Zurn’s proposed construction does not include the “tilting” capability of the plunger. Sloan’s proposal includes “slanting,” which is another word for “tilting.” See Merriam-Webster Thesaurus, available at www.merriam-webster.com/thesaurus/tilt (“slant” is a synonym for “tilt”). Because “tilt” is clear on its face, using the word “slant” is unnecessary. Indeed, Sloan’s counsel conceded during the *Markman* hearing that “tilt” is accurate. Finally, the prosecution history makes clear that plunger must be capable of sliding along the horizontal axis and tilting and sliding along the axis of plunger travel that is not at an angle to the horizontal axis. (See R. 314-3 at JA0253-55.)

Both parties agree that the disputed term includes a reference to mounting the plunger such that it is capable of traveling at an angle. The main point of contention in the parties’ respective proposals is that Sloan’s proposal incorporates a numeric limitation – *i.e.*, mounted such that the plunger is capable of sliding and tilting to a degree sufficient to cause a difference in flush volumes of at least 30% – whereas Zurn’s proposal does not contain such a limitation. After reviewing the words of the claims, the specification, and the relevant prosecution history, Zurn’s approach is more accurate.

Sloan relies on the reexamination history in support of importing a numeric limitation into the construction of this term. The reexamination history, however, does not demonstrate that Sloan intended to import a numeric limitation into the term. To be sure, the reexamination history suggests that a plunger tilt is required to achieve the reduced volume flush, (R. 314-3 at JA0253), but it does not contain any evidence suggesting that Sloan intended to limit the angle

such that it is “sufficient to cause a difference of at least about 30% in flush volumes.”

Accordingly, the Court adopts Zurn’s proposed construction, which does not include the numerical limitation.

IV. “Tilting the Inner End of the Plunger”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
Causing the plunger shank to slant to an angle sufficient to create a difference of at least about 30% in flush volumes.	Moving the plunger so that it travels along a plunger travel axis that is at an angle to another plunger travel axis (e.g. a horizontal axis).	Tilting the inner end of the plunger so that the plunger is at an angle to the horizontal plunger travel axis.

This term appears in claims 1, 7, 8, and 18. (*See* R. 369, Revised Joint Claim Construction Chart at 5.) Both parties agree that the tilt causes the plunger to be at an angle. Such a construction is also supported by the specification. (*See* ‘635 Patent, col. 2, ll. 28-30 (“Actuation in an upward vertical direction will tilt the plunger up and cause it to travel on the angled plunger travel axis.”).)

Sloan’s attempt to import a numerical limitation into this term fails for largely the same reasons as with the term “plunger mounted for sliding and tilting,” explained above. Contrary to Sloan’s argument, the ‘635 Patent does not tie the concept of plunger tilt with a requirement that the tilt is sufficient to create a difference of at least about 30% in flush volumes. Indeed, construing the disputed term to incorporate a reference to a flush volume differential would render other portions the claims superfluous. *Digital-Vending Servs*, 672 F.3d at 1274-75 (instructing that courts should construe claim terms “such that words in a claim are not rendered superfluous”).

Specifically, other portions of the relevant claims discuss the purpose of tilting the inner end of the plunger. This suggests that the phrase “tilting the inner end of the plunger” does not

relate to the purpose of the tilt, but rather relates to the mere action of tilting. *Id.* Claim 1, for example, recites a dual mode flush valve “wherein tilting of the handle in a first direction moves the plunger along the first axis of plunger travel providing a first flush volume of water adequate to evacuate solid waste and tilting of the handle in a second direction *tilts the plunger and moves the plunger along the second axis of the plunger travel providing a second flush volume of water adequate to evacuate liquid waste.*” (Reexam. Cert. at col. 1, ll. 47-54 (emphasis added).)

Likewise, claim 18 recites a retrofit system for a flush valve system wherein “actuation of the user handle in the second direction cause[s] *the plunger to tilt* about the point within the bushing passage *and to move through the bushing passage causing release of a second flush volume of water for removal of liquid waste.*”¹³ (*Id.* at col. 2, ll 15-16, 33-37 (emphasis added).) Claim 8, which is dependent on claim 7, recites “[t]he method of claim 7 wherein the tilting step is characterized by tilting the inner end of the plunger downwardly *to reduce the flush volume.*”¹⁴ (‘635 Patent, col. 7, ll. 39-41 (emphasis added).) As such, the Court construes the term to reflect the action of tilting, but not the purpose of the tilt.

¹³ Although claim 18 is not asserted, the Federal Circuit has stated that “[o]ther claims of the patent in question, *both asserted and unasserted*, can . . . be valuable sources of enlightenment as to the meaning of a claim term.” *Phillips*, 415 F.3d at 1314 (emphasis added and citation omitted). Moreover, “[d]ifferences among claims can . . . be a useful guide in understanding the meaning of particular claim terms.” *Id.* (citation omitted).

¹⁴ Claim 7 recites, in relevant part, “a method of operating a flush valve in a dual mode comprising the step of adjusting the flush volume by tilting the inner end of the plunger to alter the location at which it contacts the relief valve.” (‘635 Patent, col. 7, ll. 34-38.)

V. “Axis of Plunger Travel” Or “Bushing Passage Defining Both a First Axis of Plunger Travel and a Second Axis of Plunger Travel Which Is Angled With Respect to the First Axis of Plunger Travel”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
The bushing passage defining both an imaginary line through the center of a first bore of the bushing passage and an imaginary line through the center of a second, partially overlapping bore of the bushing passage, which imaginary line is angled with respect to the first axis.	A straight line upon which the plunger travels that is coincident with the longitudinal axis of the plunger.	<p>“Axis of plunger travel” means “axis on which the plunger travels”</p> <p>and</p> <p>“The bushing passage defining both an imaginary line through the center of a first bore of the bushing passage and an imaginary line through the center of a second, partially overlapping bore of the bushing passage, which imaginary line is angled with respect to the first axis” requires no construction.</p>

The parties do not agree which term the Court should construe. Zurn argues that the Court should construe “axis of plunger travel,” while Sloan asserts that the Court should construe “bushing passage defining both a first axis of plunger travel and a second axis of plunger travel which is angled with respect to the first axis of plunger travel.” The phrase “axis of plunger travel” appears in claims 1, 4-6, 12, 14, 19, and 29-31. (*See* R. 369, Revised Joint Claim Construction Chart at 6-7.) The phrase “bushing passage defining both a first axis of plunger travel and a second axis of plunger travel which is angled with respect to the first axis of plunger travel” appears in claims 1 and 29. (*Id.* at 8.)

Sloan’s proposed term requires no construction. The Federal Circuit has explained that “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more

than the application of the widely accepted meaning of commonly-understood words.” *Phillips*, 415 F.3d at 1314. Sloan’s proposed construction is not only confusing and unclear, it also impermissibly reads the concept of multiple bores into the ‘635 Patent, despite the examiner’s clear rejection of the use of a first and second bore as indefinite during prosecution of the ‘635 Patent. Specifically, the examiner rejected claims 2, 3, 16, 21-25, and 30 as indefinite, stating that it is “unclear . . . how the first and second bore can be two different bores since it appears that the plunger passes through only a single bore. That single bore may have a non-uniform radius but it is still a single bore.” *See* R. 314-2 at JA0133. In response, Sloan amended those claims, along with dependent claim 29, even though the examiner did not reject claim 29, to remove the reference to multiple bores. (*See* R. 314-1 at JA0100-01.) As such, including the multiple bore language in the construction of the disputed term is improper. Because the phrase that Sloan asks the Court to construe is clear when read in the context of the remainder of the claim language, the Court gives the phrase its plain and ordinary meaning.

Zurn’s proposed term also has a plain and ordinary meaning, and thus claim construction “involves little more than the application of the widely accepted meaning of commonly-understood words.” *Phillips*, 415 F.3d at 1314. As Zurn asserts throughout its brief, the ordinary meaning of “axis of plunger travel” is the “axis on which the plunger travels.” (Zurn’s Mem. at 10-11.) Moreover, the specification repeatedly refers to the plunger moving along an axis. (*See, e.g.*, ‘635 Patent, col. 5, ll. 30-46.) The reexamination history does as well. In allowing claims 1, 12, 18, and 36, for example, the examiner stated that those claims “require that the plunger be able to move in a horizontal axis of travel for one flush move (full volume) and that the plunger is tiltable for the other flush volume (reduced volume).” (R. 314-3 at JA0253.) In addition, the examiner distinguished prior art references on the grounds that they do

not “disclose a flush valve system which allows the plunger to travel in a horizontal manner and a tiltable manner.” (*Id.* at JA0254). Zurn’s proposal of a “straight line,” however, is unsupported by the evidence, both intrinsic and extrinsic, and therefore is not a part of the Court’s construction.

VI. “Displaced Away From a Center of the Horizontal Axis of Travel Such that an End View of the Shank Is Displaced From the Horizontal Axis of Travel”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
That viewed when facing the end of the plunger shank, the end of the plunger shank is not substantially centered on the imaginary line through the center of the horizontal bore of the bushing passage.	Moving the plunger along a plunger travel axis that is at an angle to the horizontal axis of travel.	That viewed when facing the end of the plunger shank, the end of the plunger shank is not substantially centered on the horizontal plunger travel axis.

This term appears in claim 12 of the ‘635 Patent. (*See* R. 369, Revised Joint Claim Construction Chart at 9.) That claim recites

A system for operating a water flush valve in a plurality of user selectable flush volume modes including a liquid waste removal mode and a solid waste removal mode, comprising a user handle operable in at least a first and second direction to cause a face plate to pivot about a plurality of portions of the face plate; and the face plate of the system coupled to the user handle and constructed to respond to handle motion by at least the following: (1) motion in a first handle direction of the user handle causing the face plate to pivot about a first face plate portion of the face plate moving in a first face plate direction and a coupled lower portion of a plunger head and coupled shank remaining substantially centered on a horizontal axis of travel such that an end view of the shank remains substantially centered on the horizontal axis of travel, thereby releasing a first flush volume of water for solid waste flushing purposes in the solid waste removal mode and (2) motion in a second handle direction of the user handle causing the face plate to pivot about a second face plate portion of the face plate moving in a second face plate direction and a coupled upper portion of the plunger head and the coupled shank displaced away from a center of the horizontal axis of travel such that an end view of the shank is displaced from the horizontal axis of travel, thereby releasing a second flush volume of water adequate for liquid waste flushing

purposes in the liquid waste removal mode.

(R. 314-1, Reexam. Cert., col. 1, l. 56 through col. 2, l. 13 (emphasis added).) Zurn’s primary argument against Sloan’s proposed construction is that it does not include “movement,” whereas Zurn’s proposed construction does. (Zurn’s Mem. at 13-14.)

Zurn’s argument is misplaced, however, because a reading of the disputed term in the context of the remainder of the claim indicates that “displaced” is a static condition, not a term of movement. *See ERBE Elektromedizin GmbH v. Canady Tech. LLC*, 629 F.3d 1278, 1284 (Fed. Cir. 2010) (“[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.”) (quoting *Phillips*, 415 F.3d at 1313). Indeed, in claim 12, subsections (1) and (2) mirror one another, as the underlined terms exemplify above. As the entirety of the claim makes clear, subsection (1) relates to a solid waste flush, while subsection (2) relates to a liquid waste flush. In subsection (1), the corollary term of “displaced away from,” as it appears in subsection (2), is “remaining substantially centered,” which also indicates a static condition.

Further, Zurn argues that construing the term in the manner Sloan advances would render claim 12 indefinite. *See Becton, Dickinson and Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1255 (Fed. Cir. 2010) (courts should construe claims to sustain their validity, if possible) (citing *Whittaker Corp. v. UNR Indus., Inc.*, 911 F.2d 709, 712 (Fed. Cir. 1990)). Specifically, Zurn argues that Sloan’s construction “encompasses any movement of the plunger so long as the movement is not coincident with the horizontal axis of the bushing” and that such a construction “could include instances wherein the plunger contacts the relief valve sleeve at the same relative height and does not result in two different flush volumes.” (Zurn’s Mem. at 14.) The Court

disagrees. As Sloan notes, the remainder of claim 12 clearly requires two different flush volume modes, as well as release of a “first flush volume of water adequate for solid waste flushing purposes in the solid waste removal mode” and a “second flush volume of water adequate for liquid waste flushing purposes in the liquid waste removal mode.” (*See* Reexam. Cert., col. 1, l. 56 through col. 2, l. 13.) When read in conjunction with the remainder of the claim, a person of ordinary skill in the art would understand that claim 12 requires that the end view of the shank is displaced enough to create the first flush volume and second flush volume described above.

The portion of Zurn’s proposed construction that refers to a “horizontal plunger travel axis,” however, is accurate. The Court therefore adopts that particular phrase in its construction. For the reasons previously explained, Sloan’s reference to “the horizontal bore of the bushing passage” is inappropriate as it implies that there are multiple bores. The examiner clearly rejected this concept during prosecution. (*See* R. 314-2 at JA0133.)

VII. “Tilted Portion” (of the Bushing Passage)

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
A portion of the bushing passage with a slanted wall that allows the plunger to tilt.	A portion of the bushing configured so that the plunger moves along an angled axis of plunger travel.	Portion with a tilted wall.

This term appears in claims 9 and 10 of the ‘635 Patent.¹⁵ (*See* R. 369, Revised Joint Claim Construction Chart at 10.) The specification and the claim language of the ‘635 Patent support the Court’s construction. Specifically, the bushing passage, as shown in Figures 5 and 6, shows a non-symmetrical bushing passage with a tilted wall. In claim 9 and dependent claim 10,

¹⁵ Although claim 9 is not an asserted claim, claim 10, which is an asserted claim, depends from claim 9. Therefore, the parties seek construction of claim 9’s terms.

the “tilt portion” is described as a portion of the bushing passage. *See* ‘635 Patent, col. 7, ll. 49-51 (“a bushing engageable with the socket and having a non-symmetrical bushing passage defined therethrough, said passage including a tilted portion”) and col. 7, ll. 57-59 (“The handle assembly of claim 9 further comprising an indicia indicative of the location of the tilt portion of the non-symmetrical bushing passage.”). As such, the portions of the proposed constructions that refer to “bushing passage” or “bushing” are unnecessary and redundant. Further, it is inappropriate to include the function of the “tilt portion” in the construction, when the portion of the claims where the term appears clearly refer to the structure of the bushing, and not its function.

VIII. “Adequate”

The term “adequate” appears in claims 1, 12, and 18 of the ‘635 Patent. (R. 369, Revised Joint Claim Construction Chart at 11.) Although the parties initially disputed the proper construction of this term, they have reached an agreement that the proper construction is “sufficient; at least the minimum necessary to achieve a result.” (*Id.*)

IX. “Arcuate Portion”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
A portion of the wall of the opening that is curved like a bow.	A portion of a circle.	Portion that is curved like a bow.

This term appears in claim 33. (*See* R. 369, Revised Joint Claim Construction Chart at 12.) Claim 33 recites a flush valve comprising, among other things,

a passage through the bushing, the passage defining a first opening and a second opening, one of said openings having a lower arcuate portion, an upper arcuate portion and a pair [of] extension portions joining the upper and lower arcuate portions, the other of said openings having a lower arcuate portion and an upper arcuate portion substantially joined to one another

(‘635 Patent, col. 11, ll. 6-12.) Neither party argues that the specification defines the term “arcuate portion,” although both agree that the specification provides that “the arcuate portions . . . may be fully semi-circular or they could extend somewhat less than a full 180°.” (*Id.*, col. 6, ll. 38-43.) Zurn’s proposed construction is belied by the language in the specification, which expressly states that the “arcuate portion” need not be fully semi-circular—in other words, an arcuate portion need not be “a portion of a circle.” Sloan’s construction, on the other hand, defines “arcuate” in accordance with the general dictionary meaning of that term, *see* Merriam-Webster Collegiate Dictionary (10th ed. 1999) (“curved like a bow”), and is not inconsistent with the specification. *See Advanced Fiber Techs. (AFT) Trust v. J&L Fiber Servs.*, 674 F.3d 1365, 1373 (Fed. Cir. 2012) (“[C]ourts may rely on dictionary definitions when construing claim terms, ‘so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.’”). The Court therefore adopts that construction, with one modification. When read in the context of the remainder of claim 33, the reference to “a wall of the opening” is unnecessary. (*See* ‘635 Patent, col. 11, ll. 5-11.)

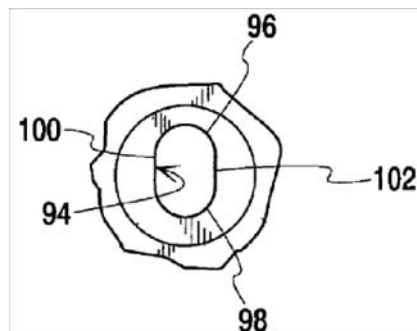
X. “Extension Portions”

Sloan’s Proposed Construction	Zurn’s Proposed Construction	Court’s Construction
Portions of the wall opening that extend from and join an end of the upper arcuate portion to an end of the lower arcuate portion.	Segments that connect two ends of the upper arcuate portion with the lower arcuate portion that are not part of the upper or lower circle.	Portions that extend from and join an end of the upper arcuate portion to an end of the lower arcuate portion.

This term appears in claims 33 and 34. (*See* R. 369, Revised Joint Claim Construction Chart at 13.) Claim 33 and the specification of the ‘635 Patent describe the “extension portions” as “joining the upper and lower arcuate portions.” (‘635 Patent, col. 4, ll. 57-62; col. 11, ll. 6-12.) The intrinsic evidence indicates that the “extension portions” are separate and distinct from

the “arcuate portions,” and that a circular opening does not include a pair of extension portions. (‘635 Patent, col. 4, ll. 57-62 (“As seen in FIG. 7 [reproduced below], the opening **95** at the outer end of the sleeve includes an upper arcuate portion **95**, a lower arcuate portion **98**, and a pair of extension portions **100** and **102** joining the upper and lower arcuate portions. The result is a somewhat oval, although not strictly elliptical, shaped opening **94**.”); JA0256-57 (on reexamination, examiner stated that the prior art reference “does not disclose the first opening including extension portions joining the upper and lower arcuate portions. A circular opening includes an upper and a lower arcuate portion, but *does not include a pair of extensions*.”) (emphasis added).)

Figure 7



In light of the Court’s construction of “arcuate portion,” the latter part of Zurn’s proposed construction—“that are not part of the upper or lower circle”—is inappropriate. With that portion stripped away from Zurn’s proposed definition, the remaining difference, aside from mere semantics, is whether the extension “portions” must be “segments.” The claim term, however, uses the term “portions,” and Zurn has pointed to nothing in the intrinsic record to indicate that the inventor intended “portions” to mean “segments.” Indeed, Zurn’s counsel conceded during the *Markman* hearing that the use of the term “portion” in this definition is accurate. Accordingly, the Court adopts Sloan’s construction, with one modification. As with “arcuate portion,” the reference to the “of the wall opening” is unnecessary in light of the

surrounding context in claims 33 and 34.

CONCLUSION

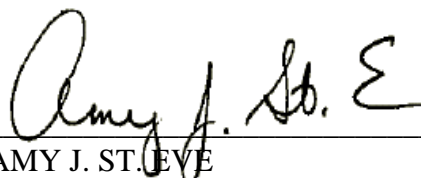
For the reasons set forth above, the Court construes the disputed claim terms as follows.

Claim Term or Phrase	Court's Construction
“dual mode flush valve”	A water conservation valve that permits a user deliberately to select between two distinct modes of flushing a fixture: either a reduced flush volume mode adequate to evacuate liquid waste or a full flush volume mode adequate to evacuate solid waste.
“a first flush volume of water . . . and . . . a second flush volume of water”	A first volume of water that differs from a second volume of water.
“plunger mounted for sliding and tilting”	Mounted so the plunger is capable of sliding along the horizontal axis and tilting and sliding along an axis of plunger travel that is at an angle to the horizontal axis.
“tilting the inner end of the plunger”	Tilting the inner end of the plunger so that the plunger is at an angle to the horizontal plunger travel axis.
“axis of plunger travel” –or– “bushing passage defining both a first axis of plunger travel and a second axis of plunger travel which is angled with respect to the first axis of plunger travel”	axis of plunger travel means “axis on which the plunger travels” and “bushing passage defining both a first axis of plunger travel and a second axis of plunger travel which is angled with respect to the first axis of plunger travel” requires no construction
“displaced away from a center of the horizontal axis of travel such that an end view of the shank is displaced from the horizontal axis of travel”	That viewed when facing the end of the plunger shank, the end of the plunger shank is not substantially centered on the horizontal plunger travel axis.
“tilted portion” (of the bushing passage)	Portion with a tilted wall.
“arcuate portion”	Portion that is curved like a bow.

“extension portions”	Portions that extend from and join an end of the upper arcuate portion to an end of the lower arcuate portion.
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DATED: September 13, 2012

ENTERED

A handwritten signature in black ink, appearing to read "Amy J. St. Eve", written over a horizontal line.

AMY J. ST. EVE
United States District Court Judge